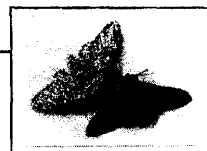


Name:

Date:

Period:

Peppered Moth Lab Activity



Introduction:

The Peppered Moth (*Biston betularia*) is a light-colored moth with gray spots. This moth was very common in England in the 1800s. The Peppered Moth *species* displayed **variation** in its population, and occasionally dark gray moths could be found. The Peppered Moth lives in the woods and is frequently preyed upon by birds. Around 1850, people noticed that the darker moths were becoming more and more common, usually in areas that had coal-burning factories. These factories produced a lot of black smoke. Our job today is to simulate what happened in England to try to better understand the increased number of dark gray moths in the population of Peppered Moths.

Procedure (at your table in groups of four or five):

1. Count out 20 white paper squares and 20 newspaper squares. Each square represents one moth (**white squares = light Peppered Moths, newspaper squares = dark Peppered Moths**).
2. Decide which partner will be the mother bird for the first part of the simulation. You can switch after every feeding session.
3. The mother bird should hold out his/her pinkies as a beak. S/he will have 15 seconds to pick up the squares of paper and place them into a secure dish **ONE AT A TIME**. The bird should try to "eat" as many pieces of paper as s/he can. To get really good results, the mother bird wears a pair of the "special" goggles.
4. Sprinkle the squares evenly onto your background. When everyone and everything is ready, your teacher will tell you to begin, and the mother birds can begin hunting.
5. At the end of each round, record the number of "uneaten" squares of each color in a data table that looks like the one shown below (construct a data table for your own lab).
6. **Reproduce!** For each "uneaten" square, add another of **the same color**. For example, if you had 5 newspaper squares at the end of the first round, you should count out 5 more to add to the background.
7. Repeat until you complete Generation SIX.
8. Clean up.

Background Paper

	White	Newspaper
	# of moths remaining (after doubling)	# of moths remaining (after doubling)
Generation 1 - start	20	20
Generation 2		
Generation 3		
Generation 4		
Generation 5		
Generation 6		

For this Lab Activity you must do the following:

1. Complete a well-written lab write-up once you have finished the activity.
2. Ensure that your data is complete and accurate (# of moths AFTER doubling).
3. Your calculations/results should include a GRAPH of your data (the number of moths over time).
4. Answer the following five questions FLUENTLY on a separate piece of paper.

Questions (you may use the book to help with the answers):

1. The number of dark and light colored moths that survived on the different backgrounds varied with the background AND the trends from table to table were very similar. Why? Please explain.
2. In real life, why did the dark-colored moths increase in places near factories?
3. Most coal burning factories today "scrub" the smoke (they catch the particles of soot) before it leaves the smokestack. What do you predict has happened to the moth population since the factories began doing this? Explain your answer.
4. What is the difference between microevolution and macroevolution? Which version of evolution does this activity illustrate?
5. What are the things that are needed for evolution to happen? First, you need to have **variation** in a population as a result of **random mutation**. What else?

**Changes in moth
population over Time**